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EXAMINER

LANG, AMY T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1714

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8

## Office Action Summary

Application No.

10/727,485

Applicant(s)

HAJMRLE ET AL.

Examiner

Amy T. Lang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>04/08/2005</u> .  | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: page 5, lines 17-18 recite the phrase "Inorganic binders are very stable at high temperatures and, for the that reason, more suitable for thermal spray applications." However, it is the examiner's position that the correct phrase should recite 'or that reason, are more suitable.'

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Dorfman (US 5,122,182).

US '586 discloses a lubricant in the form of a coating or film applied by spraying (column 1, lines 10-13; column 3, lines 1-14). The lubricant is comprised of organic or inorganic binders and solid lubricants including graphite, molybdenum disulfide, boron nitride, and tungsten disulfide (column 1, lines 16-20; column 3, lines 18-33). The total amount of solid lubricant particles in the composition is disclosed as 80 parts by wt (Example 2, column 5). The total amount of resin binder is disclosed as 101.2 parts by wt (Example 2, column 5). Therefore the ratio of solid lubricant particles to binder is 0.79 ( $=80/101.2$ ), which clearly overlaps the instant range of 19:1 to 1:19. Since US '586 discloses the use of either an organic or inorganic binder, and furthermore since the reference does not constrain the amount of inorganic binder to any particular value, it would have been obvious to use an inorganic binder in the same amount as the organic resin binder absent evidence to the contrary.

By adding 80 parts by wt of solid lubricant in a mixture comprised of a total of 1034.3 parts by wt, the amount of solid lubricant in the total mixture is 7.73% (Example 2, column 5). Therefore, the composition contains from 5 to 60 wt% solids.

The inorganic binder as disclosed by US '586 would inherently be non-dispersible in the aqueous mixture of the original liquid. Furthermore, US '586 discloses the addition of other components to the composition including a wetting agent and zinc chromate powder, where either one would act as a filler (Example 2, column 5). These components are also added in amounts less than 40 volume% of the solids, which clearly overlaps the instant claims.

US '586 discloses, in the method to produce the lubricant composition, the addition of water to the binder and solid lubricant mixture (column 3, lines 11-14). The mixture is then milled to a desired particle size cut.

US '586 is silent as to the specific method to mill the mixture.

US '182 also discloses a composition utilized for spraying a coating (column 1, lines 10-14). The composition is also comprised of a mixture of a binder, solid lubricants including molybdenum disulfide, graphite, and calcium fluoride, and water (column 1, lines 55-57; column 2, lines 33-36; column 6, lines 4-8, 26-27). The mixture is milled in a conventional process disclosed by first forming an aqueous slurry and then drying droplets to produce particles. The particle agglomerates are then classified to obtain a desired size (column 3, line 48 through column 4, line 16). This process would inherently produce an undersize and oversize particle fraction, where both are dispersed in the original liquid. US '182 discloses that the above process is useful and conventional (column 3, lines 48-58). In view of that, it would therefore have been obvious to utilize this same process in US '586.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Dorfman (US 5,122,182) and Dorfman (US 5,506,055).

US '586 in view of US '182 as discussed in paragraph 4 are incorporated here by reference, disclose a method to produce a spraying composition comprised of a mixture of a binder, solid lubricant including boron nitride, and water.

US '586 does not specifically disclose the solid lubricant as hexagonal boron nitride.

US '055 also discloses a spray composition comprised of solid lubricants, including boron nitride (column 2, lines 40-42; column 3, lines 11-12). The boron nitride is further disclosed as hexagonal boron nitride and the produced spray composition is shown to provide improved abrasability while still maintaining erosion resistance (column 2, lines 42-45; column 3, lines 11-20). In view of the advantage provided by the solid lubricant hexagonal boron nitride, it therefore would have been obvious for to also utilize hexagonal boron nitride as the solid lubricant in US '586.

6. Claims 7, 8, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Dorfman (US 5,122,182), Dorfman (US 5,506,055), and Lum (US 5,468,401).

US '586 in view of US '182 and US '055 as discussed in paragraphs 4 and 5 are incorporated here by reference, disclose a method to produce a spraying composition comprised of a mixture of a binder, solid lubricant, and water.

US '586 does not specifically disclose the inorganic binder as bentonite.

US '401 discloses a lubricating composition that is utilized as a spray composition (column 1, lines 14-16, 58-59). The composition is comprised of solid lubricants and binders, specifically bentonite (column 7, lines 36-39; column 19, line 65 through column 20, line 6). The binder effectively adheres the agglomerated lubricant particles and would inherently be stabilized above 850 degrees Celsius (column 19,

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lines 65-67). In view of the advantage provided by the use of bentonite binder, it therefore would have been obvious to use bentonite as the inorganic binder in US '586.

7. Claims 9-12, 14-16, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US 4,039,337) in view of Dorfman (US 5,506,055).

US '337 discloses a lubricating coating composition comprised of an aqueous mixture of solid lubricants including graphite, boron nitride, and tungsten disulfide and a silicate binder (column 2, lines 45-65). The amount of solid lubricant is disclosed from 5 to 70 wt%, while the binder is disclosed from 10 to 40 wt% (column 3, lines 16-19, 35-38). Therefore, the ratio of solid lubricant to binder clearly overlaps the instantly claimed range of 19:1 to 1:19. The total amount of solid lubricant in the composition is disclosed as 25.4 wt%, so that 5 to 60 wt% solids are present in the composition (Example 1, column 5).

US '337 is silent as to the method for producing the mixture wherein agglomerates are formed with a rounded shape.

US '055 also discloses a coating composition comprised of a mixture of solid lubricants and binder (column 2, lines 40-54; column 3, lines 24-25). The composition is produced by conventional methods that include stirring the mixture to produce a slurry and then drying the composition until agglomerates are formed (column 3, lines 20-39). Noting that the claimed limitation of a rounded shape is broad enough that it would be met by shapes that are generally round and are not necessarily required to be perfectly

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spherical, it is the examiner's position that, absent special process conditions, the above conventional method would intrinsically produce generally rounded agglomerates.

The method disclosed by US '055 teaches blending a mixture of fine powder constituents (column 3, lines 25-26). Therefore, the particles were inherently sized to a desired size and an oversized and undersized fraction would be produced. These fractions would have then been blended, as taught by US '055, and would inherently be non-dispersible in the original liquid.

US '337 is also silent as to the use of hexagonal boron nitride for the solid lubricant.

US '055 also discloses the use of boron nitride in the coating composition as the solid lubricant (column 2, lines 40-42; column 3, lines 11-12). The boron nitride is further disclosed as hexagonal boron nitride and the produced composition is shown to provide improved abrasability while still maintaining erosion resistance (column 2, lines 42-45; column 3, lines 11-20). In view of the advantage provided by the use of hexagonal boron nitride, it therefore would have been obvious to use hexagonal boron nitride as the solid lubricant in US '337.

8. Claims 13, 17-19, 21, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US 4,039,337) in view of Dorfman (US 5,506,055) and Lum (US 5,468,401).



US '337 in view of US 055, as discussed in paragraph 7 are incorporated here by reference, disclose a method to produce a composition comprised of an aqueous mixture of a binder and solid lubricant.

Furthermore, US '337 discloses additional components in the composition including thixotropic agents, which inherently act as fillers (column 4, lines 57-59). These fillers are in an amount less than 40 volume% of the solid lubricants (Example 1, column 5).

US '337 does not specifically disclose the use of bentonite as the binder.

US '401 also discloses a lubricating composition comprised of solid lubricants and binders, specifically bentonite (column 1, lines 14-16, 58-59, column 7, lines 36-39; column 19, line 65 through column 20, line 6). The binder effectively adheres the agglomerated lubricant particles and would inherently be stabilized above 850 degrees Celsius (column 19, lines 65-67). In view of the advantage provided by the use of bentonite binder, it therefore would have been obvious to use bentonite as the inorganic binder in US '337.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Dorfman (US 5,122,182) and Reidmeyer (US 6,432,886 B1).

US '586 in view of US '182, as discussed in paragraph 4 are incorporated here by reference, disclose a method to produce a spraying composition comprised of a mixture of a binder, solid lubricant, and water.

US '586 does not specifically disclose the binder as sodium silicate.

US '886 also discloses a lubricating composition comprised of solid lubricants, including graphite, and a binder (column 1, lines 7-11; column 4, line 61). The solid lubricants are also in an agglomerated form and the binder is further disclosed as sodium silicate (column 2, lines 38-41; column 5, lines 7-9). This disclosed composition produces a stable and consistent lubricant due to its structural integrity (column 5, line 62 through column 6, line 5). In view of the advantage provided by the use of sodium silicate binder, it therefore would have been obvious to use sodium silicate as the inorganic binder in US '586.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy T. Lang whose telephone number is 571-272-9057. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should


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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

7/21/2006

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